

DOSSIER

Greenhouse gas emissions – the prospects for Rhône-Alpes

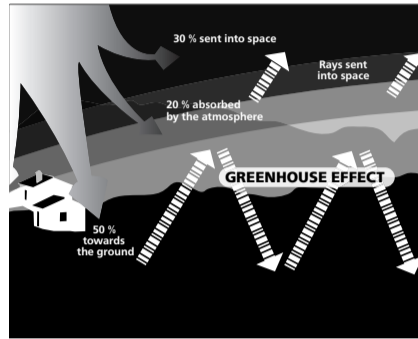
Some gases naturally present in the atmosphere have a warming effect by capturing part of the sun's rays, increasing the Earth's temperature. If these gases weren't there, the average temperature of the planet would be -18 °C! This natural phenomenon, called the "greenhouse effect", is useful for life on Earth. However, its balance is fragile. There is now a wide consensus concerning the reality of climate change due to an increase in the greenhouse effect directly linked with human activity.

Since the beginning of the industrial era, concentrations of greenhouse gases have constantly increased and have not been this high for several hundred thousand years. These gases, nearly all resulting from the use of fossil fuels (oil, gas, coal), have an impact on the planet's climate:

Since the end of the 19th century:

- the Earth has warmed up by 0.6 °C,
- the level of the oceans has risen by 10 to 20 cm,
- the snow cover has fallen by 10 % and the glaciers are retreating,
- the rainfall has increased by 5 to 10 % in the Northern hemisphere...

The countries that have ratified the Kyoto agreement have pledged to reduce their emissions by 5.2% by 2012, compared with 1990 levels. These objectives vary according to their development context. France is committed to stabilising its emissions. However, there is still much effort needed in all sectors of activity and this has to be supplied and applied locally.



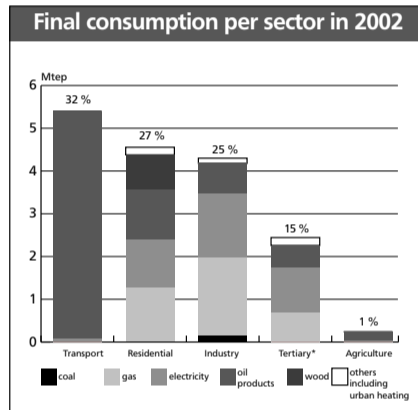
Final energy consumption of Rhône-Alpes Region: 16.9 Mtep

In Rhône-Alpes, in 2002, final energy consumption was 16.9 Mtep, or 3 tep per inhabitant (the equivalent of 3,500 litres of diesel or 70 full 50-litre tanks). The highest energy consuming sectors in Rhône-Alpes are first the transport, then residential (consumption in this sector is used for heating), and finally industrial and tertiary sectors. In 2002, oil products accounted for 46.8% of the regional energetic balance,

because of significant fuel consumption in the transport sector.

Final energy consumption increasing since 1990

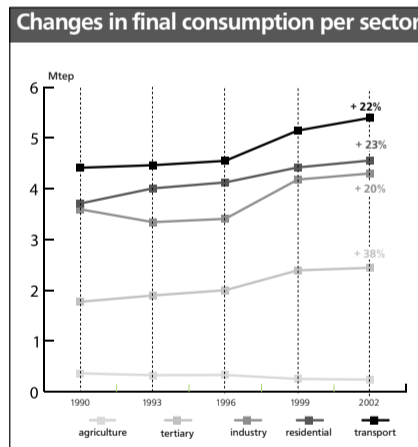
The energy consumption of Rhône-Alpes region increased by 22% between 1990 and 2002. This rise was spread throughout all sectors except for agriculture, where the figures diminished slightly.



Transport: a constantly growing truck sector

As well as being the largest consumer of energy, the transport sector has the biggest greenhouse gas emission figures (33% of emissions in Rhône-Alpes region, with road transport accounting for 95%). People travel-

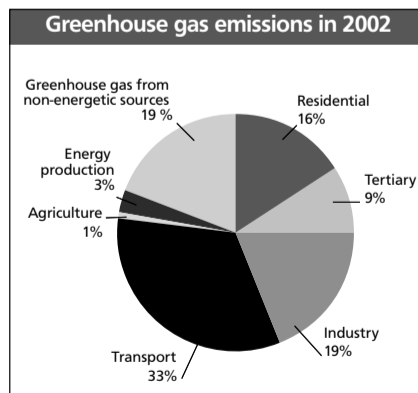
ling (by car, train or plane) account for 73% of the transport sector's energy bill. The total for road transport (travellers + goods) represents 95% of transport consumption, nearly three-quarters of which is used for cars.



Greenhouse gas emissions in Rhône-Alpes in 2002

In Rhône-Alpes, the greenhouse gas emissions reached a total amount of 50.1 Mt eq CO₂, of which 8.7 Mt eq CO₂ can be subtracted for being absorbed by carbon sinks (like forests

which absorb and fix CO₂ through photosynthesis). The transport and the building sector (residential and tertiary) are the sectors with the highest emissions levels.



For 2020: what does the future hold for our region?

What developments in energy consumption and greenhouse gas emissions can we plan in Rhône-Alpes. Two scenarios of development towards 2020 have been studied. They concern the residential sector, tertiary sector, transport and agriculture. Faced with the difficulties of planning future energy needs in the industrial sector, changes in consumption and emissions of this sector have not been taken into account.

Current Trend scenario / with no further action

The trends in consumption and energy conservation observed up to now are confirmed despite continuous regional and national support to promote policies of energy conservation and renewable energy resources development :

- = + 21% between 1990 and 2010
- = + 28% between 1990 and 2020

| | 1990 > 2010 | 1990 > 2020 |
|-------------|-------------|-------------|
| Tertiary | + 42% | + 66% |
| Transport | + 37% | + 48% |
| Residential | + 15% | + 23% |

EDITORIAL



Roger Léron, Roger Léron, President of Rhônaldnergie-Environnement

Human activity is increasing the greenhouse effect and climate change consequently.

While, fifteen years ago, there was still some doubt about the reality of this phenomenon, today, an overwhelming majority amongst the scientific community now recognises it.

In Rhône-Alpes, the temperature rose by around 2°C between 1922 and 2005. Certain signs of global warming are already apparent, with melting glaciers, the modification of stream and river flow patterns, or the northward shift of Mediterranean species ... In April 2005, the Rhône-Alpes Region adopted a regional plan for the development of renewable energy and energy management to help stem global warming. This has been an instant success as it can be seen in the number of aid applications from the region's citizens.

At national level, the "Facteur 4" group, set up to identify the different possibilities to reach the objective of dividing greenhouse gas emissions by four by 2050, is extremely pro-active in its planned recommendations, under the dynamic presidency of the economist Christian de BOISSIEU.

The future European directive on energy efficiency, which is currently being adopted, will help things along in the right direction.

The sense of responsibility and commitment of local elected representatives remains vital, not only to take strong action in the most polluting and priority sectors of building and transport, but also to deal with the geological and sanitary risks that are increased by climate change.

The Regional Observatory of energy and greenhouse gas emissions was created in 2003 after deliberation by the "Energy" Commission of the CRADT (Regional commission for territorial planning and development), in line with the Energy Collective Service Scheme.

The Observatory's principal missions are to gather, produce and distribute information, at regional level, on the production / consumption of energy and greenhouse gas emissions, and to introduce monitoring of these elements.

Its steering committee consists of the Government, via the DRIRE and ADEME, Rhône-Alpes Region, Union Française des Industries Pétrolières, Union Française de l'Electricité, EDF, Gaz de France, RTE, CESR, IERA, local authorities organising the distribution of electricity and gas, one representative from the following groups: the university, firms, consumers and Rhônaldnergie-Environnement (technical structure). Reports and prospective studies were carried out in this context.

DOSSIER CONTINUED

"Complying with KYOTO" Scenario

Consumption reduction actions are undertaken to bring greenhouse gas emissions down to 1990 level by 2010:

= **STABILITY** between 1990 and 2010
= **- 9%** between 1990 and 2020

| | 1990 > 2010 | 1990 > 2020 |
|-------------|-------------|-------------|
| Tertiary | 🏠 + 11 % | 🏠 - 5 % |
| Transport | 🚗 + 11 % | 🚗 + 4 % |
| Residential | 🏠 - 7 % | 🏠 - 22 % |

Stabilising CO₂ emissions at 1990 level by 2010 requires both the stabilisation of emissions by the transport sector (while this is currently increasing by an annual average of 2%) and the reduction of emissions in other sectors.

This stabilisation requires to set up local and regional policies for energy saving and renewable energy development consistent with national and European policies. It is within this framework that the Rhône-Alpes Region adopted a Regional Plan for renewable energy and energy conservation development in April 2005. This plan emphasises:

- raising awareness in the different publics in order to influence behaviour,
- providing leadership and accompaniment for project sponsors,
- supporting research and innovation, in order to develop renewable energy and energy performance,
- setting up adapted financial tools for the massive distribution of good practices (subsidies, preferential interest rates, etc.).

Another of the Plan's objectives is to promote equality of access to energy.

The implementation of actions, especially in the building and transport sectors, which have the highest greenhouse gas emissions levels, is vital if we are to achieve stabilisation of emissions:

- building: reduction in energy demand (insulation, acquisition of efficient boilers, etc.) and development of renewable energy,
- transport: reduction of needs through control of urban sprawl, technological improvements, rail freight, soft mobility means (bicycle, walking), particularly for short trips, development of public transport.

Stabilisation of greenhouse gas emissions calls for a reduction in energy consumption and the development of renewable energy resources through the joint mobilisation of all the players.

FOR MORE INFORMATION

- Rhône-Alpes Observatory of energy and greenhouse gas emissions – 2006 edition
- Energy and greenhouse gas emissions in Rhône-Alpes audits.
Prospective study for 2020.
Results summary.
These 2 publications can be downloaded from the Rhônalpénergie-Environnement's website (www.raee.org) in the News section, and from the Rhône-Alpes Regional Council's website www.rhonealpes.fr

Contact

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EXPERIENCES

Methanisation: an effective treatment process and a renewable energy source**Example of the cheese dairy of Tamié Abbey (Savoie)**

The cheese dairy of Tamié transforms up to 4,000 litres of milk a day to produce cheese. This process generates several types of effluent:

- **white water: resulting from cleaning milking equipment in direct contact with milk;**
- **green water: resulting from washing the floor and walls of the milking parlour;**
- **lactoserum: a residue from the process of transforming milk into cheese.**

For small dairies and cheese producers with low production levels, like Tamié Abbey, the treatment of effluents often raises problems. Indeed, they have to deal with numerous constraints, particularly in evacuating lactoserum: isolated production site, low quantities produced, high transport costs in sending effluent to exterior service providers. In addition, the highly polluting nature of lactoserum, with its high Chemical Oxygen Demand (COD), starves water courses of oxygen and seals the soil around rejection points, making its treatment even more complex.

The fall in the purchase price of lactoserum and the rise in transport costs have encouraged Tamié Abbey to find a more economically viable solution to eliminate this product.

Installation of a methaniser: a showcase project ...

The methanisation solution appeared to be the best solution to manage the annual 1,000 m³ of lactoserum. Used since 2003 this system means that lactoserum is treated on site as well as was-

tewater by using biogas to heat domestic water. The daily 125 m³ of produced biogas covers the hot water needs of the community and the cheese dairy (the equivalent of 20 litres of domestic fuel oil per m³ of lactoserum). As well as the ecological nature of methanisation, which has demonstrated an excellent purification rate of around 95%, this process also has economic benefits. The financial gain (22 €/m³ of effluent) suggests that the return on investment could be less than five years.

... rewarded in the "Rhône-Alpes 2005 Energies of Today" competition

The Tamié Abbey project being the first installation of its type in Europe, was awarded the "Companies and Agricultural sector" prize on June 1st 2006, in the context of the "Rhône-Alpes 2005 Energies of Today" competition. Organised by the Rhône-Alpes Regional Council and ADEME, and coordinated by Rhônalpénergie-Environnement, this competition is designed to reward the most outstanding achievements in renewable energy use and energy conservation.

Technical fact-sheet

Average production of 12 m³ of effluent/day at **22 g of COD/l**
Rejected into the environment: **0.7 g COD/l**
Production of biogas: **273 kWh/m³** of raw lactoserum
Cost: **255,000 €**
Subsidised by Rhône-Alpes Region, ADEME, The General Council and The Water Agency: **55%**

Widely covered by the media, the example of Tamié Abbey shows how it is possible for small and medium capacity units to take advantage of their lactoserum. The success of this project has meant that many cheese producers have become interested in the question of treating their effluent. Several other projects are currently being studied in Rhône-Alpes, such as the cheese dairy of Entremont-le-Vieux, situated in Chartreuse Natural Park.

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The "Pays Sud Grésivaudan" Local Development Council trains itself in assessment and sustainable development

In March 2006, The "Pays du Sud Grésivaudan" signed a CDPRA contract (Pays de Rhône-Alpes Development Contract) with Rhône-Alpes Region. Determined to build a territorial sustainable development project, The "Pays du Sud Grésivaudan" wanted to construct assessment tools to monitor the results and effects of its actions and increase their impact on sustainable development.

So it was necessary to ensure that the sustainable development approach was fully understood and shared by the members of the Local Development Council and the Joint Union of the "Pays du Sud Grésivaudan". That is why Rhônalpénergie-Environnement was invited to lead a training programme in assessment and sustainable development for these two players, working together in various topical commissions (agriculture, tourism, daily life, etc.).

The Training Course took place as two half-day sessions: a session of information and exchanges on assessment and sustainable development, then a session of applied work on the Development Contract of the Pays de Rhône-Alpes du Pays du Sud Grésivaudan.

About forty people from all the commissions took part in the training sessions, which enabled them to:

- brush up on the basics of sustainable development,
- think about the content of some of the elements of the contract and their contribution to sustainable development,
- learn to use assessment tools, and set out some relevant indicators for the Pays du Sud Grésivaudan.

The training course concluded on May 9th 2006 with a plenary report and the proposition of tools that are currently being produced. This involves:

- a 16-question grid to estimate the project's effects and its coherence with the objectives and principles of the Pays charter and sustainable development.
- a list of recommendations for the more specific projects of events organisation, construction of buildings, accompaniment and creation of economic activities, etc.
- a set of relevant performance indicators for Sud Grésivaudan.



The "promotion-communication" working group of the Tourism Commission was able to test the question grid on a recently published tourist guide "Pays Sud Grésivaudan – porte du Vercors". This long assessment work helped the group to realise that tourist publications could have indirect fallout on tourist flow, the usual conflicts generated by the promotion of certain practices and the eventual quality of sites in cases where their accommodation capacity is outstripped by tourist flow.

The question grid makes it possible to extend the training programme to other players and enrich projects.

Among the recommendations linked with the publication of the guide itself, was the decision to have the document printed by an "Imprim'Vert" company, which guarantees the management of dangerous wastes through approved channels.

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